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METHOD AND SYSTEM FOR OPTIMAL ROUTING OF CALLS IN A BASE STATION SYSTEM

CROSS-REFERENCES TO RELATED APPLICATIONS

This Application for Patent claims the benefit of priority from, and hereby incorporates by reference the entire disclosure of, co-pending U.S. Provisional Application for Patent Serial No. 60/177,819, filed January 25, 2000.

This Application for Patent also incorporates by reference the entire disclosure of commonly-assigned, co-pending U.S. Application for Patent Serial No. 09/494,606, filed January 31, 2000.

BACKGROUND OF THE INVENTION

Technical Field of the Invention

The present invention relates in general to the mobile telecommunications field and, in particular, to a method and system for optimal routing of calls in a Base Station System (BSS).

Description of Related Art

FIGURE 1 is a block diagram of an existing Global System for Mobile Communications (GSM) system model. Referring to FIGURE 1, the GSM model (10) shown includes a Radio Access Network (RAN) known as a BSS (12). The BSS includes two types of logical nodes: a Base Transceiver Station (BTS) 14; and a Base Station Controller (BSC) 16. In order to support circuit-switched speech or data services, the BSC 16 inter-operates or interworks ("interworking" is a term of art) with a Mobile Switching Center (MSC) 18 via an open (non-proprietary) interface known as an A-interface. As such, an MSC (e.g., 18) can serve one or more BSCs.

Each BSC in a GSM network can control a plurality (typically hundreds) of radio cells. In other words, each BSC (e.g., 16) interworks with a plurality (hundreds) of BTSs via respective Abis interfaces. Each BTS (e.g., 14) is responsible for the transmission and reception of radio signals over an air interface, Um, in one cell. Consequently, the number of cells in a GSM BSS is equal to the number of BTSs in that BSS. As such, the BTSs are geographically distributed to provide adequate radio coverage of a BSC area, which forms part of a GSM Public Land Mobile Network (PLMN).

Additionally, the BTSs provide the capacity to carry a plurality of connections (calls) between Mobile Stations (MSs) (e.g., 22) and respective BSCs. In the GSM, each BTS is equipped with one or more Transceivers (TRXs). Each such TRX (not shown) is capable of handling eight timeslots of a Time Division Multiple Access (TDMA) frame. Furthermore, each such timeslot can be assigned different combinations of logical channels, such as, for example, Broadcast Control Channels

(BCCHs) and Common Control Channels (CCCHs), Stand-alone Dedicated Control Channels (SDCCHs), and Traffic Channels (TCHs).

FIGURE 2 is a block diagram of an Internet Protocol (IP)-based BSS 100, which has been developed by Ericsson. A more detailed description of such an IP-based BSS is disclosed in the above-described commonly-assigned, co-pending U.S. Application for Patent Serial No. 09/494,606, the entire disclosure of which is incorporated herein by reference.

Referring to FIGURE 2, the IP-based BSS 100 can include three types of nodes connected to an IP network 108. A first node connected to the IP network 108 is an RBS 102. In general, the RBS 102 functions similarly to existing RBSs used for implementing a GSM model. Moreover, the RBS 102 also provides IP support for the BSS 100. For example, the RBS 102 functions as an IP host and can include an IP router (not shown). The IP router can be used to route payload User Datagram Protocol (UDP)